

Roman Community Forum

Mission Status

September 14, 2022

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Deputy Senior Project Scientist

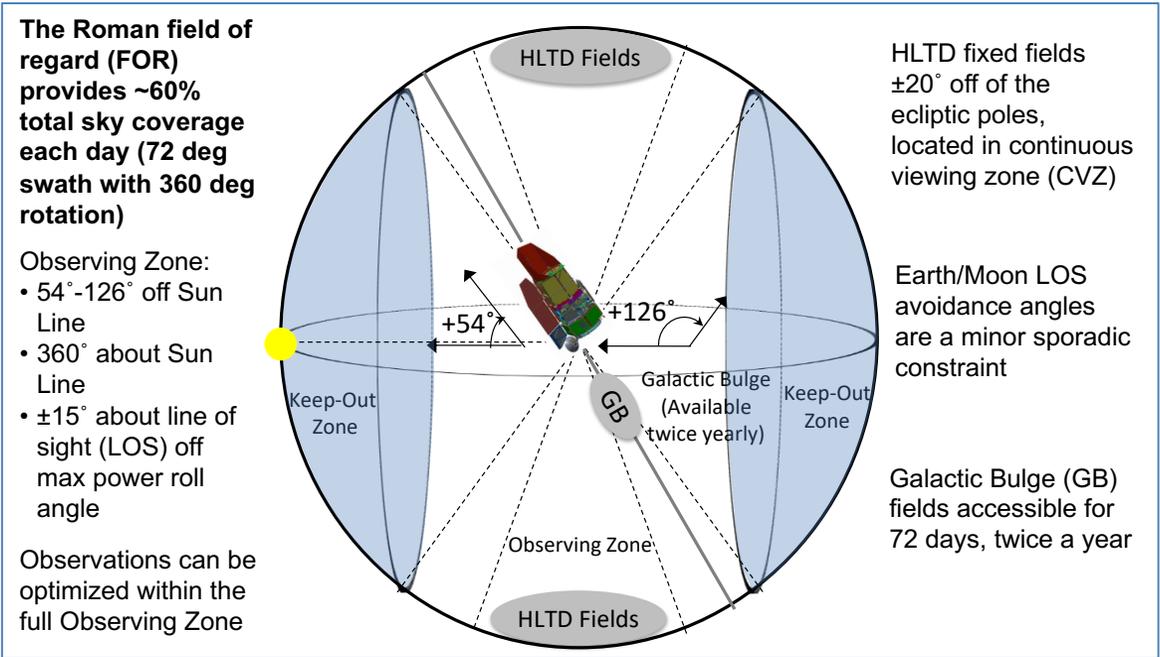
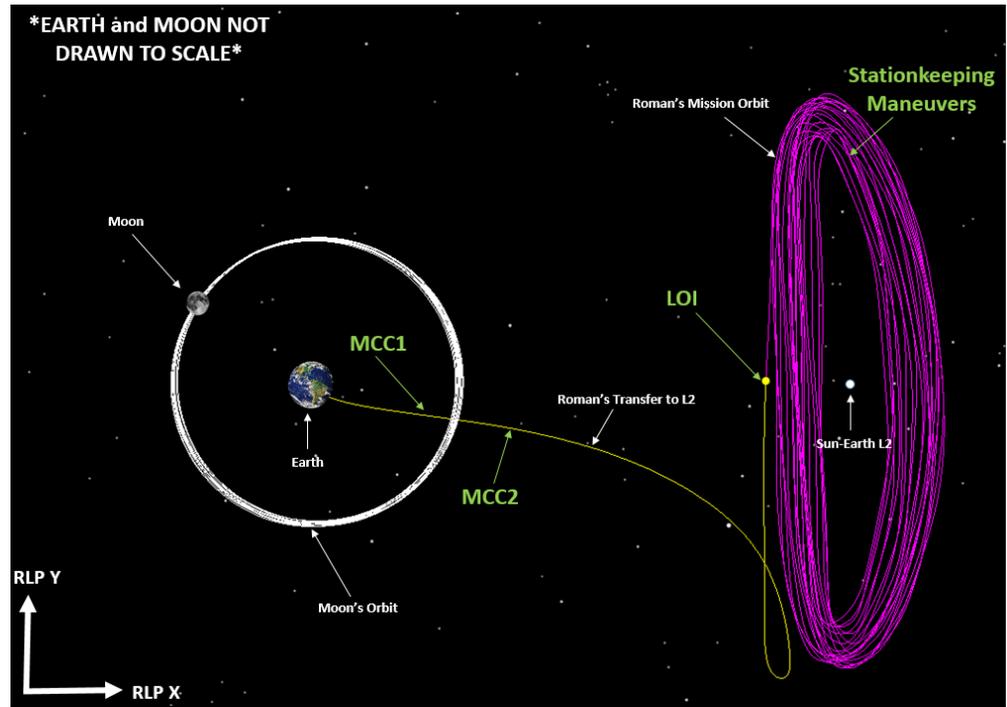
- NASA GODDARD SPACE FLIGHT CENTER • JET PROPULSION LABORATORY •
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Roman Mission Overview

- Mission Description
 - 2.4m Primary Mirror
 - Class A, with tailoring
 - 5-year primary mission, 10-year goal
- Mission Orbit
 - Quasi-Halo Orbit about Sun-Earth L2, with no Moon or Earth Shadows

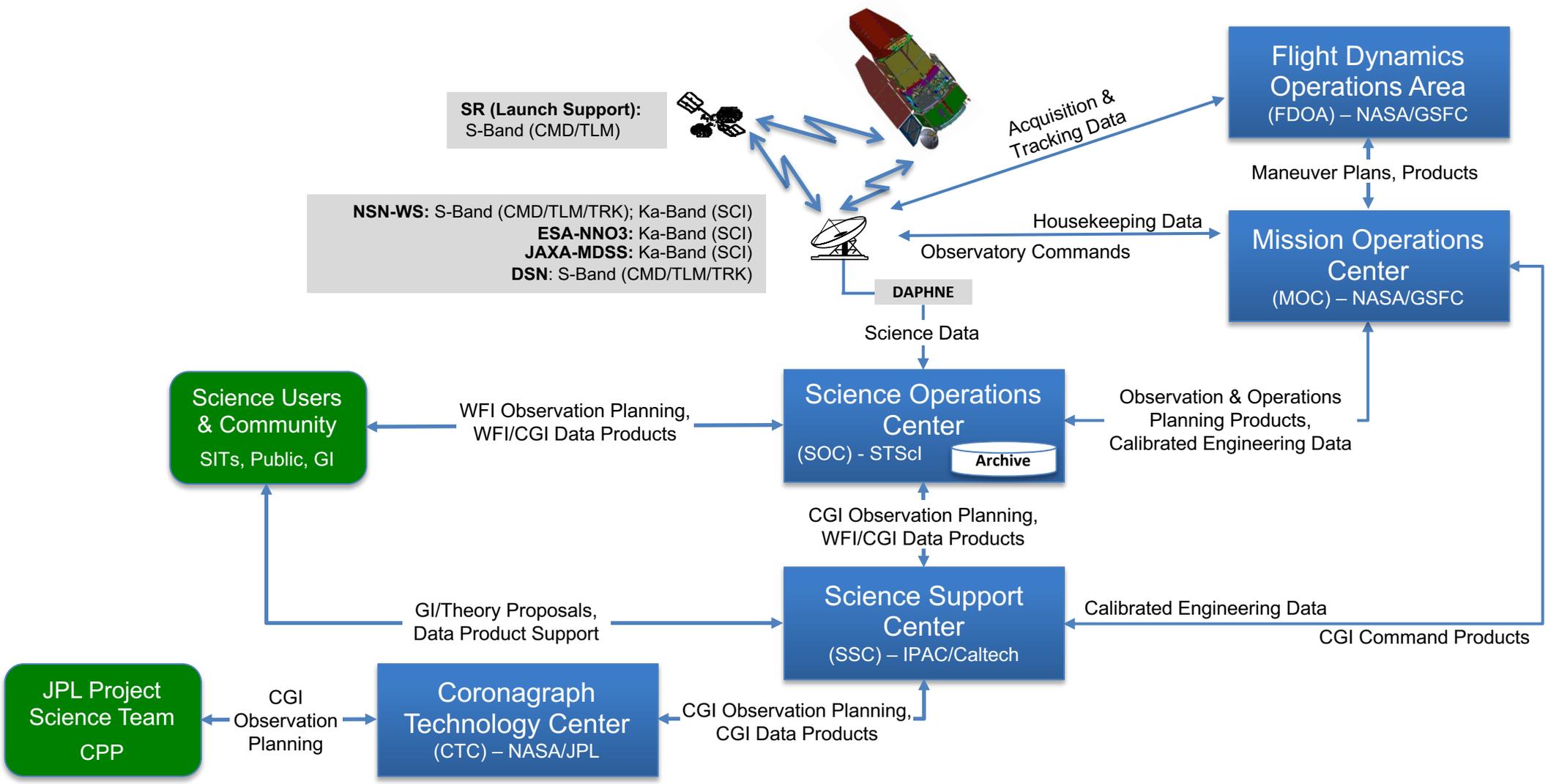
		Mission Elements	Responsibility
Flight Segment	Launch Vehicle	Launch Vehicle & Services	NASA Launch Services Program (LSP)
		Spacecraft (S/C)	NASA Goddard Space Flight Center (GSFC)
	Observatory	Optical Telescope Assembly (OTA)	L3Harris
		Wide Field Instrument (WFI)	NASA GSFC & Ball Aerospace
		Coronagraph Instrument (CGI)*	NASA Jet Propulsion Laboratory (JPL)
		Instrument Carrier (IC)	NASA GSFC
Ground Segment	Ground Stations/Networks	NASA SCA/N / International Contributors	
	Mission Operations Center (MOC)	NASA GSFC	
	Flight Dynamics Operations Area (FDOA)	NASA GSFC Flight Dynamics Facility (FDF)	
	Science Operations Center (SOC)	Space Telescope Science Institute (STScI)	
	Science Support Center (SSC)	Infrared Processing and Analysis Center (IPAC)	
	Coronagraph Technology Center (CTC)	NASA Jet Propulsion Laboratory (JPL)	

NASA GSFC (Greenbelt, MD); L3Harris (Rochester, NY); Ball Aerospace (Boulder, CO); NASA JPL (Pasadena, CA); STScI (Baltimore, MD); IPAC (Pasadena, CA)
*CGI is managed by NASA HQ



Ground Segment Architecture

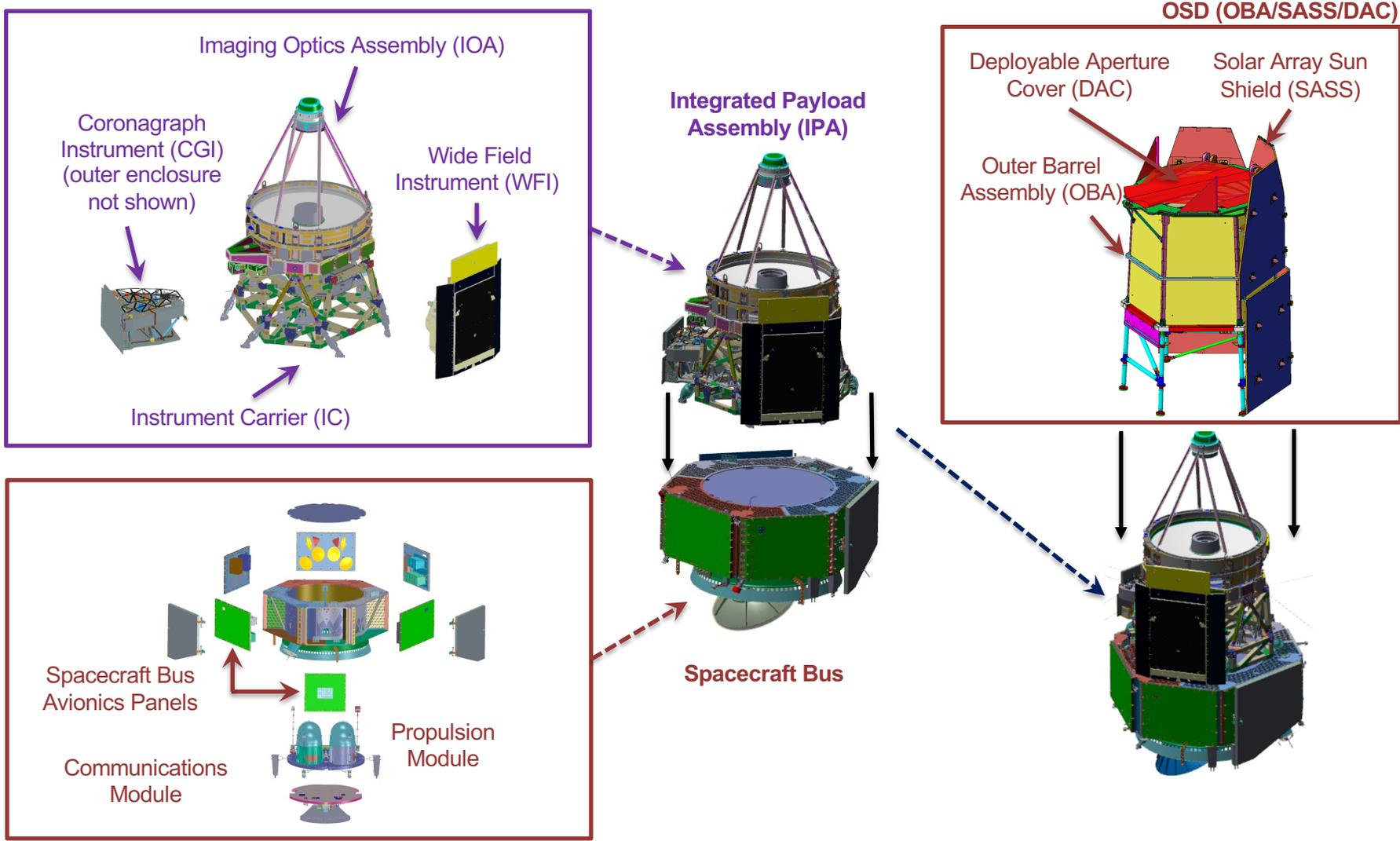
CMD – Command; TLM – Telemetry; TRK – Tracking; HK – Housekeeping; SCI – Science; SITs – Science Investigation Teams; DAPHNE – Data Acquisition Processing and Handling Network Environment; GI – General Investigator; CPP – Community Participating Program



Observatory Description

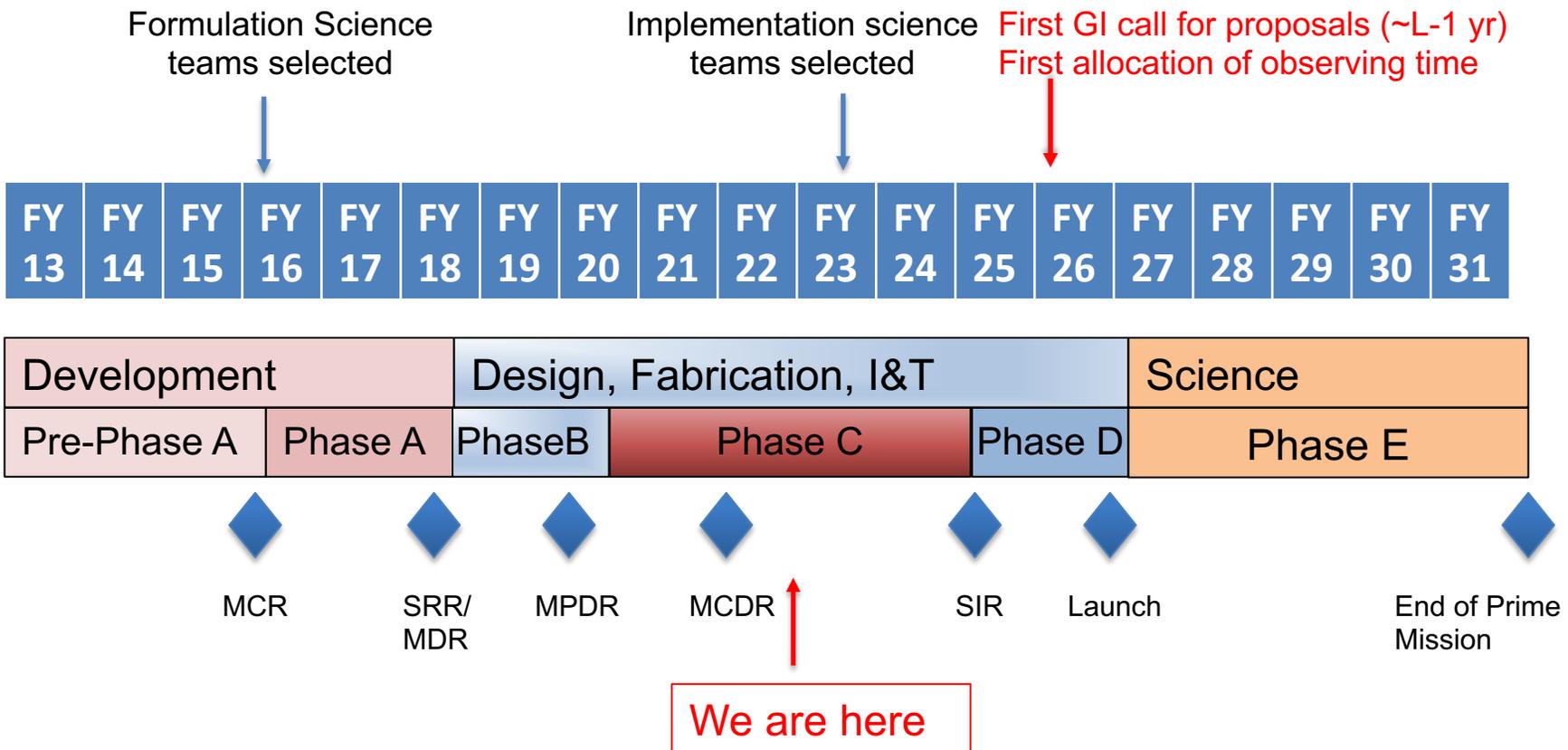
Expanded View

Observatory = **Spacecraft** + **Integrated Payload Assembly**



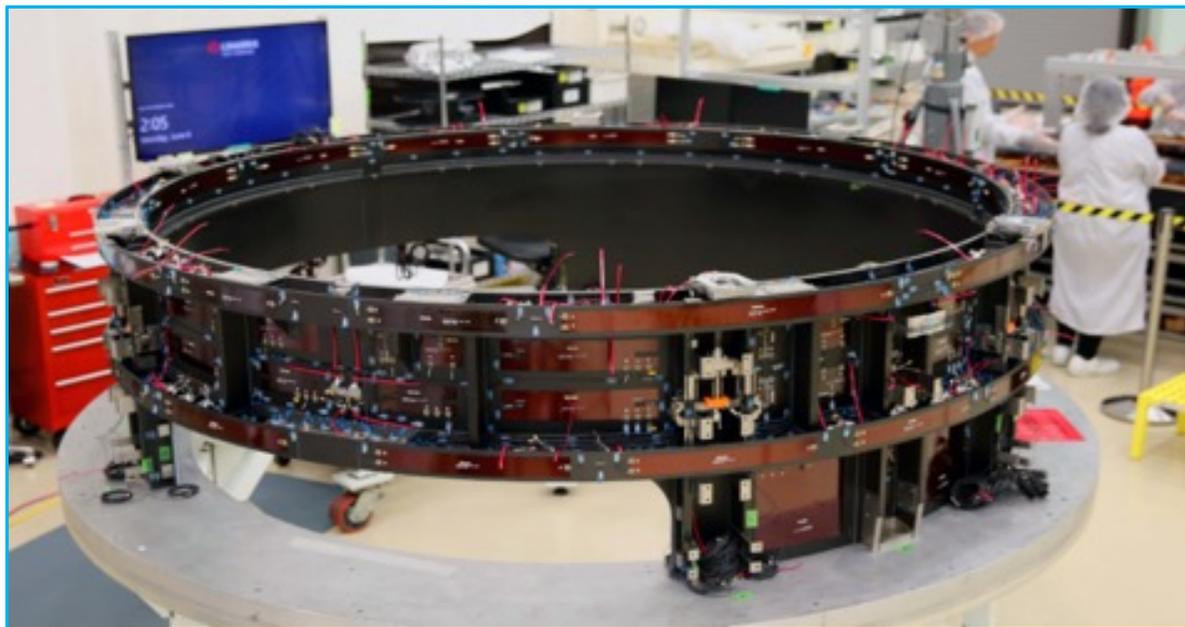
Roman Project Schedule

We have completed 10 of the 14 years from start of Development to Launch
 Project schedule and budget are consistent with Management Agreement, with all required margins

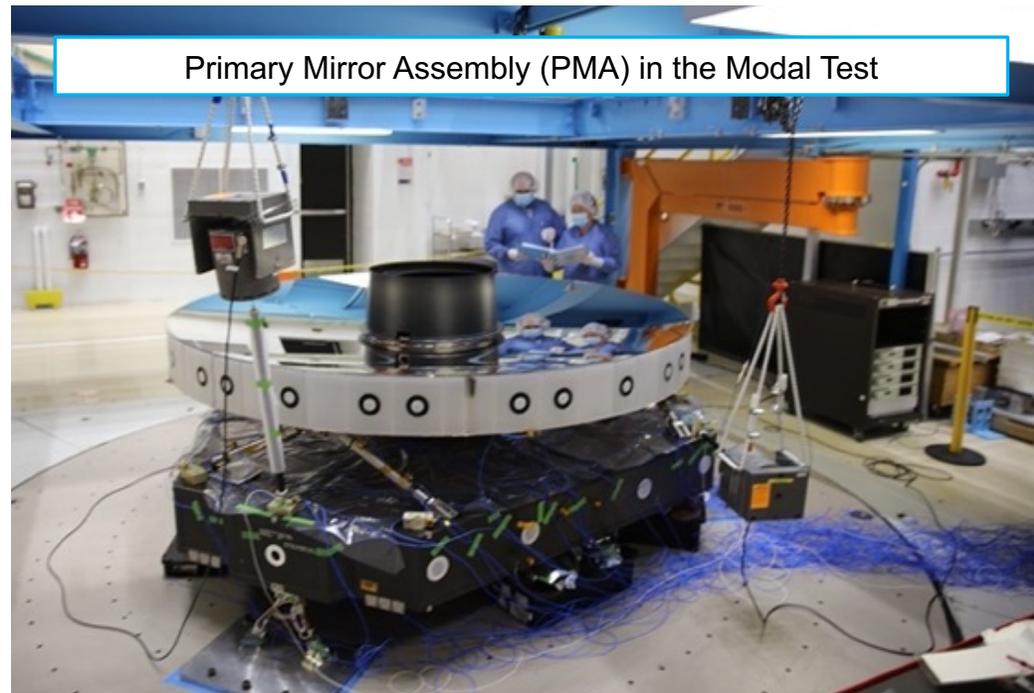


- Flight Hardware
 - Design, fabrication, test of engineering units completed by Mission Critical Design Review, just under a year ago
 - Flight systems now being fabricated and tested at component level
 - Completion of payload elements planned for early 2024
 - Telescope, instrument carrier, wide-field instrument, coronagraph
 - Completion of spacecraft, outer barrel assembly, solar arrays, etc planned for early-mid 2025
 - All elements will be fully-tested prior to delivery to Observatory I&T (Phase D)
- Ground System
 - Mission Ops Center (GSFC), Science Operations Center (STScI), Science Support Center (IPAC), ground stations (White Sands, ESA, JAXA)
 - All in similar stage of development

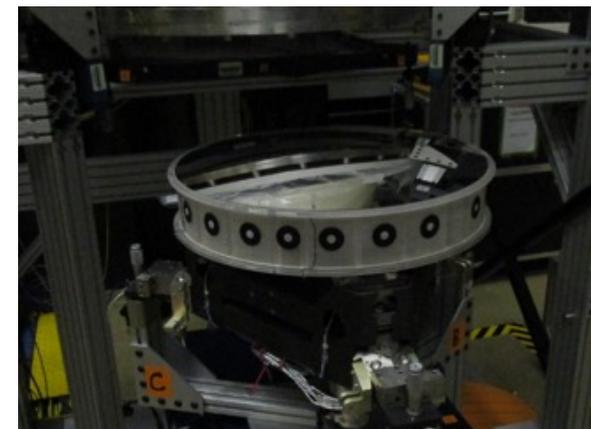
- All optics fabricated, coated, mounted, tested
- Most structural elements fabricated
- Thermo-electric hardware in midst of installation
- Primary and secondary mirror assemblies complete
- Relay optics for WFI, CGI in various stages of test



Forward Metering Shell (FMS)



Primary Mirror Assembly (PMA) in the Modal Test



Secondary Mirror Assembly in final optical test

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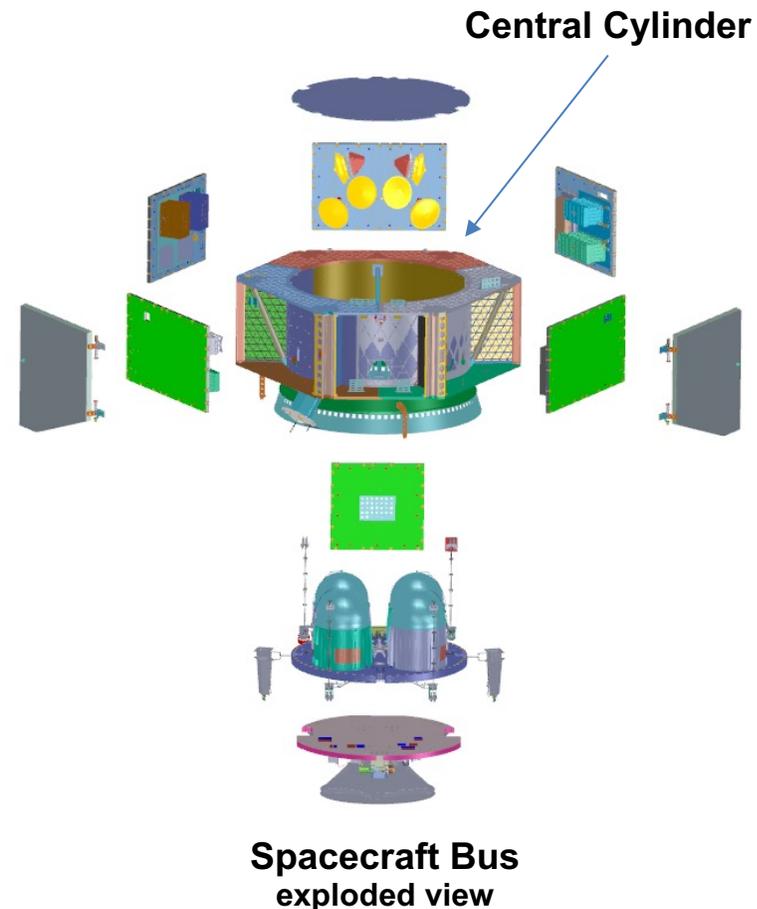
Spacecraft

- Structural components beginning to arrive (central cylinder, avionics panels, Comm deck - rest due in coming months)
- Solar array substrate panels, Propulsion system components beginning to arrive
- Antenna pointing system components being assembled
- Antenna, Ka transmitter undergoing environmental tests
- Reaction wheels about to begin environmental testing
- Avionics in various stages of assembly



Receiving Central Cylinder in B.5 high bay for Spacecraft Bus

Roughly 1 ½ m tall by 2 ½ m across



- We now have measured mirror reflectivities, detector QE, filter transmission (and out-of-band rejection)
- Mirror surface figures meet specs at ambient (cold tests coming)
- Structure mechanical and thermal properties match model inputs
- All predictions for survey efficiency, optical performance, etc presented to date are consistent with measured properties of the observatory